

connect

ADAC

umlaut

HYBRID CONNECTIVITY

In our major comparative test, seven mid-range plug-in hybrid cars could show what they have to offer in terms of infotainment, navigation and connectivity.



When it comes to the connectivity capabilities of modern cars, the popular synonym of a “smartphone on four wheels” is already obsolete – at least for some of the manufacturers. Using eSIMs, the vehicles pull data for online services from the network to provide the

driver with up-to-date information and also allow a certain level of productivity on the road. Be it real-time data for accurate route calculation, gasoline prices or the availability of parking spaces; music streaming services have also long been directly linked to the car, and even office tools including a browser are

no longer absent when on the road on one’s own four wheels. Not to mention an app that always keeps the most important vehicle data at hand.

Of course, this wide range of functions should also be easy to use. For the second time, connect has therefore teamed up with ADAC and umlaut for a major car connectivity

test. Since the trend toward electromobility is unstoppable, this time we called in seven popular plug-in hybrids from the mid-range to check the current state of affairs in connectivity and user experience. And the manufacturers have definitely made up some ground compared to last year.

Rainer Müller, Lennart Holtkemper

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BMW 330e

► The 3 Series is BMW's best-selling car and a hybrid drive is therefore a must in order to reduce fleet consumption. With its 12 kWh battery, the car has an electric range of 60 kilometers (WLTP) – slightly less than the Mercedes CLA. However, thanks to 297 hp of system power, the BMW is a bit more fun to drive.

It's also fun to look at the fine 12.3-inch cockpit display, which BMW adds another 10.25-inch touchscreen alongside. The Bavarians' system offers the most control options: There's a rotary-push control including character recognition and a gesture control that lets you direct the music. Everything is rounded off by the best voice control in our test, which can even open the car's windows. The only thing the testers missed, was controlling the cockpit display contents via the steering wheel buttons. Also, the navigation map cannot be adapted this way either. However, the very short system start-up phase of only 20 seconds is quite

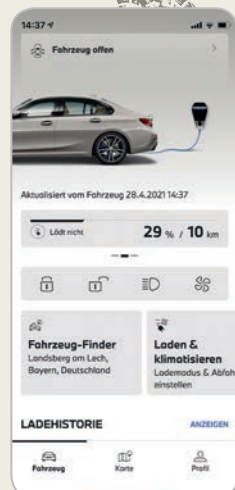
good. The weather can also be called up for any location and news can be obtained from many sources. Thus, the 3 Series is ahead in terms of productivity. Sadly, BMW has dropped the Office integration, so calendar and mail applications are missing. We also searched in vain for a web browser.

Still, those who want more functionality can conveniently connect their iPhone wirelessly in order to use Car Play. With Android Auto, you are limited to use certain Android phones. Since the 3 Series offers an eSIM for online services, the passengers can surf on the road via a Wi-Fi hotspot.

BMW 330e

Total performance: 218 kW (297 PS)
Combustion engine: 135 kW (184 PS)
Electric engine: 61 kW
Battery capacity: 12 kWh
Top speed: 230 km/h
E-range: max. 60 km
Test car price: 74 416 Euros

connect verdict: good (803 points)



You can see the charge status of your BMW via the app and can also pre-condition the car.



Graphics: Mlloje/shutterstock.com

As in the Mercedes, the navigation works very well and provides a realistic calculation of the expected arrival time. Additional data such as prices and occupancy trends of parking garages and on-street parking including color coding of availability are practical. Charging station information is also stored, but not equally detailed for all providers.

If you leave your car, you can lock and unlock it remotely via the MyBMW app. The App also enables you to view a plethora of vehicle data. The remote view in 3D, which provides an image of the surroundings via the car's parking cameras, is remarkable. Overall, however, the app does not come close to that of the Mercedes – even though its ease of use is good. For example, the first-mile navigation or a driver's log are missing. In the end, the 3-series ranks behind the CLA with a "good" overall score and a bit of a gap – but it is miles ahead of the third-place finisher, VW's Arteon.

Jaguar E-Pace

► The compact SUV is one of the Brits' most popular models and is now also available with a plug-in hybrid drive offering a total of 309 hp. The high price compared to the other candidates is partly explained by the very high-quality special equipment of the test car provided by the manufacturer – the rims alone cost around 1800 euros extra. The basic version of the E-Pace P300e isn't exactly cheap either, but it can still be bought for 58,340 euros.

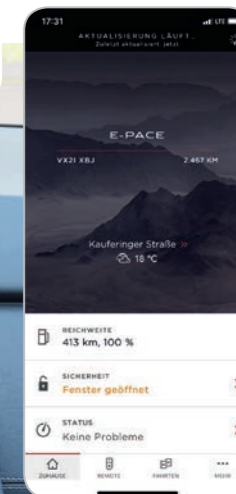
The compact speedster combines a powerful drive unit with high-quality materials – which guarantees the best driving experience in any case. But what does it look like in terms of connectivity? First of all, you have to find your way around a bit, because the manufacturer provided the E-Pace with a total of three smartphone apps. Our testers didn't quite understand the purpose behind this, because only "Jaguar InControl Remote" could be used productively. However, the British company has announced the launch of

a new app at the end of the year. We assume that the slight confusion will then come to an end. In the aforementioned app, status information is clearly displayed. The doors can be opened and closed remotely, and a digital logbook is also on board. However, the app was a bit stubborn with some of its features, so they had to remain untested. The test ran smoother when it came to navigation, even though the range of functions does not quite match the premium claim of the noble Brit. However, everything that is actually offered by the system works smoothly – including the search for alternative routes, parking spaces and charging stations.

JAGUAR E-PACE P300e R-DYNAMIC S AWD

Total performance: 227 kW (309 PS)
Combustion engine: 169 kW (200 PS)
Electric engine: 80 kW
Battery capacity: 15 kWh
Top speed: 241 km/h
E-range: max. 55 km
Test car price: 75 332 Euros

connect verdict: satisfactory (684 points)



The "Jaguar InControl Remote" app is clearly structured and easy to use.

Kia Sorento

► Even though Kia should no longer be reduced to low prices, as the Koreans are increasingly scoring points with high-quality vehicles, the bulky Sorento is one of the most expensive models from the Hyundai subsidiary. The new plug-in hybrid version of the seven-seater even costs over 11,000 euros more than the version with a classic combustion engine. In return, however, the Sorento in its Platinum equipment line is not stingy when it comes to convenience. But does that also apply to the networked functions? The answer is a resounding yes, because on the one hand, the rapid progress made by the Koreans is also evident in the infotainment area: the display elements – in addition to the main and cockpit screens, a head-up display is standard equipment – are clearly structured and mostly intuitive to operate. There is a back button for each menu item, and the second rotary knob for station or zoom settings is also practical.

A special feature of the Sorento is that the images from the exterior mirror cameras are automatically displayed in the cockpit when the lights flash. We also liked features such as the inductive charging pad or the “rear conversation“ feature, which records the driver’s voice and outputs it via the rear speakers. On the plus side is also the Kia’s clearly structured and feature-rich smartphone app UVO. The navigation also offers little cause for criticism in terms of operation, route guidance and the integration of live services. Nevertheless, in this category, the Korean upstart still has some room for im-

provement. For example, the Sorento cannot offer premium features like augmented reality, traffic light recognition, accurate positioning or Google Earth integration.

The voice control could also be somewhat more flexible. In addition to navigation destinations and voice calls, various settings can be controlled by voice, but this does not always work well because the Kia does not reliably understand the syntax – for example, it will fail if you only say “play station XY“ instead of “play station XY on the radio“. Its drivers and passengers even have to do without some productivity and entertainment functions completely – for example an office or news app is simply missing. Music streaming services can only be used via the smartphone.

All in all, the Sorento achieves a respectable result in our test, but it does not come beyond a good mid-field rank.

KIA SORENTO 1.6 T-GDI PHEV PLATINUM

Total performance: 195 kW (265 PS)
Combustion engine: 169 kW (230 PS)
Electric engine: 66,9 kW
Battery capacity: 13,8 kWh
Top speed: 193 km/h
E-range: max. 68 km
Test car price: 62 860 Euros

connect verdict: satisfactory (690 points)



The UVO connectivity app can be used to start and end the charging process, among other things.



Arranging favorite functions facilitates quick operation in the Mercedes app.

Mercedes-Benz CLA

► The CLA Shooting Brake is based on the A-Class and is the most spacious version of the line. Mercedes stows a 15.6 kWh battery in the sleek station wagon, which powers its electric motor with an impressive 102 hp. The CLA can travel up to 75 kilometers on electric power alone, after which the 160-hp gasoline engine has to be used.

Sitting behind the wheel, you look at the heart of the infotainment system: two 10.5-inch screens with full HD resolution. The Mercedes multimedia user experience (MBUX) is operated intuitively via a touchpad in the center console, which also provides haptic feedback, or directly by touch screen operation. There are also two sensor buttons under the thumb on the steering wheel to control the displays on both screens. If you find this still too complicated, you can invoke a digital assistant with “Hey Mercedes“ and ask it to control the temperature or the lights. It answers questions about the weather or general requests just as dili-

gently and understands spoken commands very well. The Benz gets all its information from the Internet via an eSIM. When stationary, you can even use a web browser for surfing and can retrieve reviews of restaurants and hotels via Yelp. The weather app even includes ski resort data. Otherwise, a good degree of productivity is provided thanks to e-mail and calendar integration. Still, it would have been nice to be able to dictate Whatsapp messages in addition to SMS messages. Also, the line breaks in the presentations of appointments should be smaller.

The CLA entertains its occupants via integrated music apps like TuneIn, Amazon Music, or Tidal. Logging in

is quite easy via a QR code. However, it is unclear why Spotify is missing. Of course, you can pair your phone via Bluetooth. Android Auto and Apple Car Play are on board, but they only work when wired.

The Mercedes scores many points for its navigation capabilities, which are very accurate thanks to reliable real-time data. A unique feature is the AR navigation, which displays animated arrows in a live camera image when turning. The navigation system also provides parking information as well as info about charging stations and gas stations. Unlike the BMW, the Mercedes unfortunately no longer displays gas prices. The manufacturer has improved the Mercedes Me app, which is one of the best in our test. It provides information on the car’s status and charging level, and the car can be locked and unlocked, including all windows.

The CLA deservedly secured the overall victory and also received the grade “very good“ for the best user experience in this comparison test.

MERCEDES-BENZ CLA 250 E SHOOTING BRAKE

Total performance: 193 kW (262 PS)
Combustion engine: 118 kW (160 PS)
Electric engine: 75 kW
Battery capacity: 15,6 kWh
Top speed: 235 km/h
E-range: max. 75 km
Test car price: 55 745 Euros

connect verdict: good (846 points)

Peugeot 508

► The Peugeot 508 has been on the market as a plug-in hybrid car since last year. The dynamically designed station wagon, which we were able to test in the premium GT variant, comes with a few interesting features – such as an externally visible LED light that is automatically activated in pure electric mode and may facilitate entry into environmental zones.

Core components for infotainment and connectivity are the 3D navigation system NAC in conjunction with the MyPeugeot app and the two large screens in the vehicle.

While the generously sized cockpit display is hardly noticeable and the steering wheel buttons are also largely self-explanatory, using the 10-inch touchscreen above the center console initially takes some getting used to. The reason for this are the flaps below the monitor, which are reminiscent of piano keys and enable the user to select functions. The air conditioning control system

is also located below this – it takes a while to find your way around this unconventional design.

However, there are other reasons why the connectivity-relevant equipment of the sleek French car only scores a school grade of “sufficient“. For example, a gesture control or a customizable menu are nowhere to be found. Another aspect is the lack of playback sources: Neither web radio nor streaming services like Spotify are offered. If you want to listen to music beyond terrestrial stations, you have to pair the 508 with your smartphone – via Bluetooth or a cable, for which plenty of USB-A jacks are available.

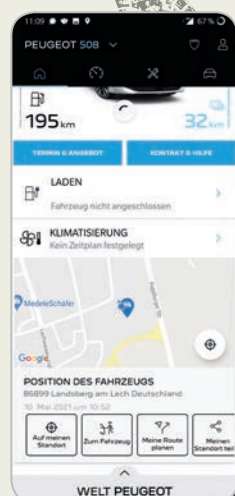
Speaking of the smartphone, the specific vehicle app only offers limited remote functions. But at least it is quick to set up and easy to use.

Various vehicle data including the car's location and the remaining ranges of the combustion and electric engines can be called up remotely. However, navigation destinations can only be sent from the app to the vehicle when there is a Bluetooth connection, i.e. when you are sitting in the car anyway. Route planning and navigation hardly cause any problems for the NAC system – as long as the destination is not entered by voice. Quotation from a tester: “Even simple navigation commands are not understood.“ So this is an area which clearly needs attention from the manufacturer. And even though the 508 scores better in the category of user experience than in terms of the feature evaluation, the overall result is still only “sufficient“.

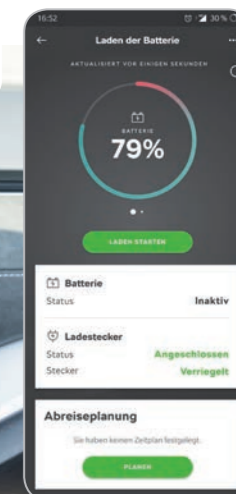
PEUGEOT 508 1.6 HYBRID 225 E-EAT8

Total performance:	165 kW (225 PS)
Combustion engine:	133 kW (181 PS)
Electric engine:	80 kW
Battery capacity:	11,5 kWh
Top speed:	240 km/h
E-range:	max. 52 km
Test car price:	62 470 Euro

connect verdict: sufficient (623 points)



Not only the current location is transmitted to the MyPeugeot app, but also the range.



The charging process can be started and monitored remotely via app – including using a timer.

Skoda Octavia

► The Skoda Octavia, which is consistently one of the most popular car models in this country, is not only the best-selling vehicle in our test field, but also the most affordable.

A mid-range plug-in hybrid car without optional equipment for just under 42,000 euros is almost a challenge to the competition. This is why we were quite curious to see whether the Czech bestseller in the tested equipment variant “Style“ could also keep up with its more expensive rivals in terms of connectivity and infotainment.

In any case, the instrument display leaves a positive first impression. Both the cockpit and head-up displays provide a wide range of information that, to a certain degree, can be controlled intuitively with the steering wheel buttons. The operation of the main screen takes more getting used to, especially since individual menu areas can only be accessed via the function keys placed below the screen.

In terms of navigation, the Skoda ranks in the solid midfield. We liked for example that it suggested alternative routes before and during the journey. Parking spaces and charging stations are also easy to find. However, the Columbus navigation system is somewhat unfamiliar with real-time traffic data – the actual driving times are sometimes significantly longer than those calculated by the system.

There is also hit and miss in the voice control. Even common points of interest are sometimes not recognized, and system settings cannot be made using voice control. However, it is possible to steer through media content, volume and the climate control

via voice commands. It is also possible to dictate text messages, but only after the function has been selected on the display.

When it comes to connectivity, the popular family estate loses out somewhat. It neither has a digital key nor integrated streaming services. It also lacks any kind of office functions, weather information or news apps. The connection to the smartphone is better solved. Various vehicle information can be displayed in the MySkoda app, for example about doors, lights, mileage and charge status, as well as various other status information. Doors and air conditioning can also be controlled remotely.

If these existing networking functions are not enough, the Skoda can also be connected with Android Auto and Apple Carplay, the latter even wirelessly. Nevertheless, the hybrid Octavia just manages to achieve an overall grade of “satisfactory“, and it narrowly misses the mark in our feature evaluation.

SKODA OCTAVIA COMBI 1.4 TSI IV

Total performance:	150 kW (PS)
Combustion engine:	110 kW (150 PS)
Electric engine:	85 kW
Battery capacity:	12,8 kWh
Top speed:	220 km/h
E-range:	max. 61 km
Test car price:	45 658 Euro

connect verdict: satisfactory (657 points)

VW Arteon Shooting Brake

► Like the CLA, the Arteon as a Shooting Brake is a rather long vessel and quite fresh on the market. Despite the vehicle's considerable length, VW only installs a battery with a capacity of 13 kWh, which ranks rather at the lower end in the test. The price of our test car, however, is quite substantial at around 64,000 euros, surpassing the test winner CLA by 10,000 euros. So, does its user experience come close to that of the Mercedes?

As far as the We-Connect app is concerned: Yes! It shows a lot of information about the vehicle and is clearly structured. This means you can quickly find all the relevant data. The app can even be used to share access to the car. Still, a more detailed charge monitoring would be desirable, and sending addresses to the car did not always work reliably.

Inside, we are greeted by the Discover Pro infotainment system. Its main display has a comparatively small diagonal of 9.2 inches. Never-

theless: the system is clearly laid out, but you have to get somewhat used to the flood of touch-sensitive buttons. Even the air conditioning is controlled via touch control, although there is unfortunately no haptic or acoustic feedback. Compared to BMW and Mercedes, VW also has some catching up to do in terms of voice recognition. You usually have to give commands in a predefined order, and the range of functions is not up to par with the competition either. The system also only accepts SMS dictations if you own certain Android models. iPhones are not supported – this needs improvement. However, the

fact that Android Auto and Car Play each work wirelessly is brilliant. And you actually should use one of the two if you want look for more productivity. Because there is no Office integration for calendar and mails in the Arteon, nor is there a weather or news app in the system.

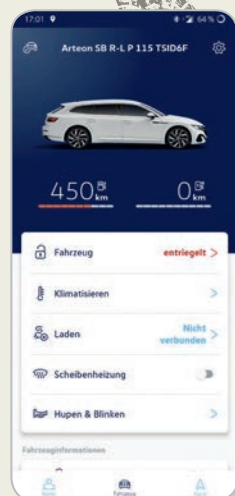
As far as navigation is concerned, the Arteon is again in the lead. If the system is ready to be operated a considerable 42 seconds after booting – that takes twice as long as with BMW. The weak processor also regularly slows the user down in other areas. However, the real-time traffic information is very accurate, as is the parking information. The integration of charging locations including a detailed description of the most important key data and occupancy status turned out to be very practical for our hybrid.

In terms of features and user experience, the Arteon presents a satisfactory picture overall – that does not quite do justice to the car's price.

VW ARTEON SHOOTING BRAKE eHYBRID

Total performance: 160 kW (218 PS)
Combustion engine: 115 kW (156 PS)
Electric engine: 85 kW
Battery capacity: 13 kWh
Top speed: 222 km/h
E-range: max. 57 km
Test car price: 64 175 Euros

connect verdict: satisfactory (709 points)



The VW app is simple and clear, which makes it very easy to use.



The testers in action (from left to right): Darani Yogalingam (Senior Consultant UX and Mobility) and Marcel Derichs (UX Consultant) from umlaut, Lennart Holtkemper from connect, as well as Andreas Pfeffer and Elia Stegner from ADAC.

Methodology

The updated test matrix from our test partner umlaut is now even more practically oriented and takes aspects of e-mobility into account. Connectivity-relevant features and user experience each determine half of the overall ranking.

■ As in many areas of life, connectivity is increasingly becoming a standard while driving a car – the vehicles are becoming smarter and smarter. Together with our long-time test partner umlaut, we have been actively supporting this development since early 2019 with regular vehicle tests focusing on connectivity, infotainment, navigation and user experience. But two years is a long time in the IT world, which is why the experts at umlaut have adapted the test procedure in the meantime to the current state of the art and also to somewhat changing usage habits. Based on scientific surveys, they have re-weighted the test categories and revised the equipment list of the vehicles.

The overall score for car connectivity, in which the test vehicle can reach a maximum of 1,000 points, is made up of the two major examination blocks of features and user experience, each of which is included in the overall score with up to 500 achievable points.

The feature category is divided into the main categories infotainment, navigation and connectivity. For infotainment, the focus is on the number, size and resolution of screens, the controls including touch display, voice commands and gesture control, as well as the available sound components and entertainment options.

In terms of navigation, features for route planning, visualisation, route guidance and available live services are evaluated.



”

The visible improvements in the user experience compared to the previous year are pleasing, with Mercedes and BMW at the top. None of this year's candidates scored worse than sufficient. In the process, we expanded the test to include additional networking functions and categories, thus raising the overall standard.“

Hakan Ekmen, Managing Director at umlaut

In the area of connectivity, the tests focus on the scope of functions of the manufacturer's app, the available interfaces, and possible productivity options.

The basis for the evaluation of the user experience is a two-stage model: First, the umlaut experts carry out a large number of predefined application scenarios (use cases) in the vehicles. These task-related tests are then supplemented by object-related tests based on standardized questionnaires, which incorporate both the overall usability and the visual aesthetics of the smartphone app and the infotainment system in the vehicle.

As part of the revision of our test procedure, additional connectivity functions were added to the predefined application scenarios. These include linking the smartphone app to the vehicle or vehicle information displayed in the app.

The task-based tests are evaluated in a total of nine different categories. These include

connecting the car with the smartphone app (remote functions), navigation, convenience, productivity, user-friendliness, communication, voice control, entertainment and, as a completely new area, the Digital Cockpit category. Here, among other aspects, the visualisation of an energy-saving driving style in the cockpit is evaluated.

Since we will be focusing our vehicle tests on vehicles with electric drives in the future – i.e., on pure electric vehicles and, for a certain transitional period, on plug-in hybrids as well – we have expanded the classic use cases to include scenarios which target e-mobility functions. Among other aspects, this involves taking the (electric) range into account when planning routes. The updated test catalogue also includes information about charging points or charging station recommendations. Another aspect in this category is app-based remote charging monitoring.

Test Results

Brand	BMW	Jaguar	Kia	Mercedes-Benz	Peugeot	Skoda	Volkswagen	
Model	330e	E-Pace P300e R-Dynamic S AWD	Sorento 1.6 T-GDI Plug-in-Hybrid Plat.	CLA Shooting Brake 250 e	508 1.6 HYBRID 225 e-EAT8	Octavia Combi 1.4 TSI iV	Arteon 1.4 eHybrid	
Infotainment system	BMW Life Cockpit Professional	PIVI Pro with Pro Services	UVO Connect with Kia Connected Services	MBUX	3D-Satnav System NAC	Columbus	Discover Pro	
Price of Test Vehicle at time of testing (Euro)	74 416	75 332	62 860	55.745	62 470	45 658	64 175	
Features								
Infotainment: Display and Hardware								
Size: Main display/Cockpit display/Additional Display (Inches)	10,25/12,3/	11,4/12,3/	10,25/12,3/	10,25/10,25/	10/12,3/	10/10,2/	9,2/10,25/	
Resolution Main display/Head-up display/Eco trainer	Full-HD/optional/	Full-HD/optional/	1920 x 720/	Full-HD/optional/	1920 x 720/	1560 x 700/optional/	1280 x 640/optional/	
Infotainment: Interfaces								
Voice Recognition: classical/AI-based/natural language	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
Gesture control/Pad (Handwriting)/Controller	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
Wheel buttons: Media/Cockpit/Voice control/Telephony	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	
User profiles/customizable menus	+/+	+/+	+/+	+/+	+/+	+/+	+/+	
Display: haptic Feedback/Touch control	+/+	+/+	+/+	+/+	+/+	+/+	+/+	
Infotainment: Entertainment								
Android Auto/Apple Carplay/Mirror Link	wireless/wireless/	wired/wired/	wired/wired/	wired/wired/	wired/wired/	wired/wireless/	wired/wireless/	
Third party apps (App Store)/Virtual Personal Assistant	+/Alexa bookable	+/	+/	+/	+/	+/	+/	
FM/DAB/Web radio/Sound controls/Equalizer/Surround sound	+/+/+/+/+	+/+/+/+/+	+/+/+/+/+	+/+/+/+/+	+/+/+/+/+	+/+/+/+/+	+/+/+/+/+	
Optical drive/USB music playback/Video playback	+/+/	+/+/	+/+/	+/+/	+/+/	+/+/	+/+/	
Navigation: Features								
Map updates/POI search: integrated/online	manual + OTA/+/+	manual/+/+	manual + OTA/+/+	manual + OTA/+/+	only manual/+/	manual + OTA/+/+	manual + OTA/+/+	
Navigation: integrated/cloud-based	+/+	+/+	+/+	+/+	+/	+/+	+/+	
Considering range/Alternative routings/Eco routing	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
Navigation: Visualization								
Augmented Reality navigation/traffic light recognition	+/+	+/	+/	+/	+/	+/	+/	
Traffic sign recognition/Speed limit display	+/+	+/+	+/+	+/+	+/+	+/+	+/+	
Display of street names during route guidance: current/following	+/+	+/+	+/+	+/+	+/+	+/+	+/+	
Maneuver information: Arrow/Lanes/Position on lane	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
3D maps/3D buildings/Google Earth	+/+/	+/+/	+/+/	+/+/	+/+/	+/+/	+/+/	
Navigation: Live Services								
Parking opportunity: Street/Parking garage/Gas stations/pricing	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	
Live traffic information: TMC pro/RTTI/online	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
Charging stations: Information/Availability	+/+	+/+	+/+	+/+	+/+	+/+	+/+	
Connectivity: Smartphone App								
App name/open and close doors/share location	My BMW/+/	Jaguar Remote/+/	Kia UVO/+/	Mercedes Me/+/	MyPeugeot/+/	MySkoda/+/	We Connect/+/	
Send address/POI to vehicle/First/Last Mile Navigation	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	
(De-)activate Air condition/AC timer/private carsharing	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
Maintenance reminder/Push info/Geofencing	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
Vehicle information/status/Driver's log/Charge monitoring	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	
Connectivity: Interfaces								
eSIM/SIM Slot/Use of phone's data quota	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
LTE/5G/Car2X/Bluetooth/USB-A/USB-C/SD Card Slot	+/+/+/+/+/+	+/+/+/+/+/+	+/+/+/+/3x/+/+	+/+/+/+/+/5x/	+/+/+/+/4x/+/+	+/+/+/+/+/2x/	+/+/+/+/+/2x/+/+	
inductive Charging (Smartphone)/initial duration of data packets	optional/3 years	optional/3 years	7 years	optional/3 years	optional/3 years	optional/3 years	3 years	
Connectivity: Productivity and Online services								
Digital key/WiFi Hotspot/Offline mode	optional/+/+	+/+/+	+/+/+	optional/+/+	+/+/+	+/+/+	optional/+/+	
Remote Diagnostics/eCall (Emergency)/bCall (Roadside assistance)	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	+/+/+	
Weather information/address book/news/Stocks/Sport/Calendar	+/+/+/+/+/+	+/+/+/+/+/+	+/+/+/+/+/+	+/+/+/+/+/+	+/+/+/+/+/+	+/+/+/+/+/+	+/+/+/+/+/+	
SMS: enter/dictate/show/read aloud	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	
E-Mail: enter/dictate/show/read aloud	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	+/+/+/+	
Browser/Concierge Service/integrated Streaming: Spotify/others	+/+/+/+/Napster, Deezer, Amazon	+/+/+/Deezer	+/+/+/	+/+/+/Tidal, Amazon M.	+/+/+/	+/+/+/	+/+/+/Apple M., Tidal	
Test results								
Feature Score	max. 500	good (385)	sufficient (329)	satisfactory (339)	good (404)	sufficient (287)	sufficient (322)	satisfactory (348)
Infotainment	200	145	135	143	147	106	137	130
Navigation	100	89	73	78	88	66	71	75
Connectivity	200	151	121	118	169	115	114	143
UX Score (User Experience)	max. 500	good (418)	satisfactory (355)	satisfactory (351)	very good (442)	satisfactory (336)	satisfactory (335)	satisfactory (361)
Smartphone app/Remote functions	30	23	25	27	26	20	24	26
Navigation	50	47	42	37	48	37	42	45
Convenience	50	45	45	44	44	39	45	45
Productivity	20	19	16	18	17	16	11	14
User friendliness	20	17	17	15	17	14	17	16
Communication	50	46	45	41	47	45	42	45
Voice Control	40	37	19	27	36	24	25	25
Entertainment	50	49	42	50	48	50	37	45
Digital Cockpit	40	29	31	29	40	32	31	33
System Perception during use	150	106	73	63	119	59	61	67
connect	VERDICT max. 1000	good 803	satisfactory 684	satisfactory 690	good 846	sufficient 623	satisfactory 657	satisfactory 709

Conclusion

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Compared to the first edition of our big connectivity comparison test in 2020, the participating manufacturers have improved considerably. In defense of last year's candidates, it should be mentioned that they were representatives of the compact car class back then, whereas this year we have reached into the shelves one floor higher. Nevertheless, it must be said that there are no more total failures in the current test of seven mid-range plug-in hybrid car models – particularly when it comes to the manufacturers' smartphone apps.

However, the overall picture has not changed significantly: In the final tally, only the German premium providers earned the school grade "good." One reason for this is probably that BMW and Mercedes-Benz (can) simply invest more in research and possibly have the better data. In addition, the Bavarians and the Swabians are now increasingly incorporating their leading connectivity technologies, which were developed for the luxury class cars, into their volume models as well.

The fact that the CLA was ultimately able to pull ahead of the 330e is due to its top rating for user experience and the fact that it does not show any weaknesses in any of the examined categories – even though it is one of the less expensive vehicles in the test field.

However, there are also many small bright spots to be found among the other manufacturers: Kia and VW receive the grade "good" for their navigation equipment, and virtually all candidates are largely convincing in the UX areas of convenience, entertainment, and digital cockpit.

